

**UNITED STATES DISTRICT COURT  
EASTERN DISTRICT OF WISCONSIN**

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**NATIONWIDE AGRIBUSINESS  
INSURANCE COMPANY and  
S & R EGG FARM, INC.,**

**Plaintiffs,**

**v.**

**Case No. 15-CV-1362**

**MUNTERS CORPORATION and  
ZURICH AMERICAN  
INSURANCE COMPANY**

**Defendants.**

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**DECISION AND ORDER ON DEFENDANTS' MOTION  
TO EXCLUDE OPINIONS AND TESTING OF STEVEN HAMILTON**

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Before me is Munters Corporation and Zurich American Insurance Company's (collectively "defendants") motion to exclude expert testimony pursuant to *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993). Defendants seek to bar the testimony of the plaintiffs' fire causation and design defect expert, Steven Hamilton. (Docket # 74.) For the reasons discussed below, defendants' motion is granted in part and denied in part.

**BACKGROUND**

The underlying facts of this case are detailed in the report and recommendation on defendants' motion for summary judgment. (Docket # 100.) The plaintiffs intend to offer Steven Hamilton to testify regarding fire causation and design defect. Defendants specifically challenge the following opinions offered by Hamilton:

1. That a capacitor in the WJ200-022HF-CP inverter as installed in a Munters DC fan failed resulting in a short circuit that started a fire in the Munters DC fan installed at the S & R Egg barn;

2. That a capacitor in the WJ200-022HF-CP inverter failed as a result of excessive operating temperature conditions and excessive vibration;

3. That temperature testing of exemplar Munters DC fans confirm that the Hitachi WJ200-022HF-CP inverter as installed in the Munters DC operates at temperatures in excess of Hitachi specifications;

4. That an x-ray image shows localized melting that could only be caused by an internal electrical short circuit or failure; and

5. That a feasible alternative design exists that would have prevented the capacitor failure and fire.

(Docket # 74.) Defendants argue that Hamilton formed these opinions using scientifically unreliable methods and unfounded extrapolations from the facts and data considered.

(Docket # 70 at 2-3.) Defendants further argue that Hamilton improperly relies on his understanding of a fire incident that occurred at Green Valley Ranch in Portland, Indiana. Defendants argue that the Green Valley incident involved a different inverter and a different internal component and failure mode. (*Id.* at 3.)

## **LEGAL STANDARD**

The admissibility of expert testimony is governed by Federal Rule of Evidence 702 and *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993). *Ervin v. Johnson & Johnson, Inc.*, 492 F.3d 901, 904 (7th Cir. 2007). Rule 702 provides that:

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:

(a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue; (b) the testimony is based on sufficient facts or data; (c) the testimony is the product of reliable principles and methods; and (d) the expert has reliably applied the principles and methods to the facts of the case.

The inquiry consists of three general areas: (1) the testimony must be “helpful,” which dovetails with the relevance requirements of Fed. R. Evid. 401–403; (2) the expert must be qualified by knowledge, skill, experience, training, or education; and (3) the testimony must be reliable and fit the facts of the case. *Lyman v. St. Jude Medical S.C., Inc.*, 580 F. Supp. 2d 719, 722 (E.D. Wis. 2008).

Under the third part of the analysis, the court examines whether (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case. Fed. R. Evid. 702. The court acts “as a ‘gatekeeper’ for expert testimony, only admitting such testimony after receiving satisfactory evidence of its reliability.” *Dhillon v. Crown Controls Corp.*, 269 F.3d 865, 869 (7th Cir. 2001). To help ensure the reliability of expert testimony, the court considers, for example, whether the theory can be and has been verified by the scientific method through testing, whether the theory has been subjected to peer review, the known or potential rate of error, and the general acceptance of the theory in the scientific community. *Cummins v. Lyle Indus.*, 93 F.3d 362, 368 (7th Cir. 1996).

Finally, despite the court's role as a gatekeeper, expert testimony is liberally admissible under the Federal Rules of Evidence. *Lyman*, 580 F. Supp. 2d at 723. “Vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden

of proof are the traditional and appropriate means of attacking shaky but admissible evidence.” *Daubert*, 509 U.S. at 596.

## ANALYSIS

At issue is whether the proposed expert testimony of Hamilton, in which he concludes that the capacitor failed due to excessive heat and vibration, which in turn caused the fire, is based on sound methodology. Defendants do not challenge whether Hamilton is qualified by knowledge, skill, experience, training, or education; nor do defendants argue that the opinions (if reliable) would not assist the trier of fact. Rather, defendants challenge the reliability of Hamilton’s opinions on several grounds. First, defendants argue that Hamilton’s causation opinions lack foundational reliability. Second, Hamilton’s temperature testing is irrelevant, unhelpful, and misleading. Third, Hamilton’s testimony and evidence regarding the Green Valley incident should be excluded. And fourth, Hamilton’s defective design opinion lacks foundational reliability. I will address each argument in turn.

### *1. Hamilton’s Opinions*

Hamilton testified regarding the sequence of events at S&R Egg that he believes led to the fire. (Declaration of Theodore Dorenkamp ¶ 2, Exh. 1, Deposition of Steven Hamilton (“Hamilton Dep.”), Docket # 71.) Hamilton testified that he relied on the analysis of “the origin and cause people” who identified the Munters DC fan as the point of origin of the fire. (Hamilton Dep. at 34.) Hamilton testified that he believed the fan inverter had been overheated through its fifteen month life cycle, which led to a breakdown of the electrolytic capacitors inside the drive. (*Id.*) Hamilton opines that the heat, along with vibration, caused a short-circuit failure of at least one of the capacitors, and when the short

occurred, it caused an electrical overload to the DC bus of the rectifier, and that was the initiating event of the fire. (*Id.*) Hamilton opines that from there, the Fibox enclosure ignited and continued the fire. (*Id.* at 34-35.)

Hamilton testified that the basis for his belief that the inverter overheated throughout its fifteen month life cycle was from his laboratory testing. (*Id.* at 35-36.) In his expert report, Hamilton states that the purpose of the testing was to identify the temperatures of the Hitachi WJ200 drive during operation. (July 25, 2017 Expert Report of Steve Hamilton, (“Expert Report”) at 7, Exh. 78 to Hamilton Dep., Docket # 71-1.) Hamilton notes that according to the instruction manual to the Hitachi WJ200 drive, the maximum ambient temperature for the drive is 40°C. (*Id.*) Hamilton opined that due to the location of the inverter and the small size of the inverter’s sealed enclosure, the temperatures were higher than ambient. (*Id.*) He opined that with ambient temperatures in the poultry barn reaching 38°C or more in the summer, the inverter would have been exposed to temperatures above the Hitachi specified limits. (*Id.*)

Hamilton ran a test using an S&R Egg prototype fan. (*Id.* at 71.) This fan had a molded plastic motor enclosure. (*Id.*) The fan assembly was connected to 480-volt AC power and was run at full operating speed. (*Id.*) Ambient temperature of 20°C was measured off to the side of the fan and temperatures within the inverter’s outer enclosure were measured as high at 46°C. (*Id.*) Hamilton noted that this measurement was above the limits in Hitachi’s specification. (*Id.*)

Hamilton ran additional tests using both the prototype fan and the production model fan. (*Id.*) Both fan units were run at elevated ambient temperatures of 27°C and 32°C and the prototype fan was run at 40°C. Temperatures during the testing of the prototype fan

reached as high as 71°C within the inverter’s outer enclosure. (*Id.*) Hamilton also performed testing at half and three-quarters speeds of the fan, but found no notable temperature deviation at those speeds. (*Id.*) Hamilton placed several thermocouples to measure “hot spots” around the tested inverters. (*Id.* at 100-01.)

Hamilton also performed vibration testing on the exemplar prototype fan. (*Id.* at 73.) Hamilton noted that although the exemplar fan appeared to run smooth, the vibrations measured were far above the values given in the Hitachi specification. (*Id.*) Hamilton ran the fan at various speeds and measured the peak-to-peak vibrations in each of three planes. (*Id.*)

Hamilton explained his opinion on how the short-circuit in the capacitor occurred. (Hamilton Dep. at 40.) He stated that it was “well documented in the literature that the material between the electrodes breaks down with heat.” (*Id.*) He explained that there was water inside the separator, which evaporates faster due to the extra heat. (*Id.*) The electrical stresses between the conductors “finally bridges that, jumps across[,] and creates a short-circuit.” (*Id.*) Hamilton explained that it is normal for the capacitors to degrade due to the separator breaking down from water evaporation; but with the elevated temperatures, it broke down faster. (*Id.*) Hamilton also explained that his opinion was based on a “pretty standard engineering principle” called the “Arrhenius equation” that “applies to many materials” that “for every ten degrees centigrade of elevated temperature, you cut the life in half.” (*Id.* at 41.) Hamilton explained that the vibration contributed to the failure of the capacitor, noting that it was “established in the literature that vibration does stress capacitors and causes them to short, fail.” (*Id.*)

Hamilton explained that after the capacitor fails, it causes an overload of the DC bus. (*Id.* at 42.) He explained that the capacitor is connected across the rectifier bus, and its

purpose is to take out any kind of voltage spikes, ripples, etc. (*Id.*) Hamilton stated that if the capacitor short-circuits, then “you have a direct short between the plus and minus buses of that rectifier.” (*Id.* at 42-43.) Hamilton testified that he could not opine whether the capacitor was the initiating flame event, or whether the shorting across the DC bus was the initiating flame event. (*Id.* at 46.)

Hamilton testified that he reviewed x-rays taken of the inverters, which he believes evidences a short-circuit. (*Id.* at 211-13.) Specifically, Hamilton testified that he can tell if there was a loss of mass based on the darkness of the image, which leads him to conclude there was localized melting, and thus a short-circuit. (*Id.* 213-14.) Hamilton testified that he has never personally x-rayed an inverter, but was present when a Yaskawa inverter was x-rayed during the Green Valley incident and reviewed those x-rays. (*Id.* at 215.)

Hamilton explains that after the initial flame event occurs, the Fibox enclosure ignited. (*Id.* at 46.) Hamilton testified that he did not conduct any independent analysis of the flammability characteristics of the Fibox enclosure; rather, that his opinion came from viewing the results of the Green Valley lab inspection. He has “seen they definitely do burn.” (*Id.*) Hamilton also relies on the opinions of the plaintiffs’ other experts regarding the flammability of the Fibox enclosure. (*Id.* at 47.) Hamilton also testified that he believed the drive packaging may have possibly fueled the fire. (*Id.* at 49.) Hamilton testified that the casing for the Hitachi inverter was made of a type of plastic, although he did not know any more specific information. (*Id.*)

Hamilton testified that his opinion that the short-circuits transmitted to the Fibox enclosure and caused the Fibox enclosure to ignite is based on his experience with the Green Valley incident, because he physically saw the burned remains of the Fibox

enclosure. (*Id.* at 51.) Hamilton testified that because he saw the burned remains, he knows that the Fibox enclosure will burn. (*Id.*)

Hamilton opined regarding several design defects and opined that the design flaws could have been eliminated with alternative designs. (Expert Report at 11-12, 22.) As to alternative designs, Hamilton stated that the standard Hitachi inverter could have been used in a suitably sized metal enclosure mounted near the fan. He states that this would have isolated it from vibration and allowed for conventional cooling. (*Id.*) Hamilton alternatively opines that all fan inverters could have been mounted remotely in a clean environment. (*Id.*) While the cable length between the drive and motor is limited, there are methods to eliminate these issues and have long cable runs. (*Id.*)

## *2. Foundational Reliability of Causation Opinions*

Defendants argue that Hamilton's causation opinions lack foundational reliability. Specifically, they argue that Hamilton's opinion that the capacitor failed is speculative and unreliable because Hamilton has never designed an inverter, has no experience with the application of an inverter to any product, has no experience setting parameters or programming inverters, and has never been involved with any case involving an inverter before this one. (Docket # 70 at 14.) Defendants further argue that Hamilton is unaware of any instance of a capacitor failure leading to fire and testified that the usual end of life of a capacitor is degradation of performance, not catastrophe. (*Id.* at 15.)

Defendants also argue that Hamilton's opinion that the fire was caused by an electrical short is an unjustifiable extrapolation. (*Id.*) Defendants argue that Hamilton has presented no testing showing that a short circuit in a capacitor or diode module can result in



fire, has cited no peer reviewed publications outside of product manuals, and has no known or potential rate of such short-circuits and fires. (*Id.* at 16.)

Finally, defendants argue that Hamilton's x-ray analysis is unreliable because he has never x-rayed inverters prior to this case. Defendants argue that Hamilton did not conduct any physical comparison of x-ray images with the actual damaged inverters to confirm his theory that the x-rays showed a loss of mass. (*Id.* at 18.)

I disagree that Hamilton's causation opinions lack foundational reliability. Hamilton does not need to have designed an inverter to know that a capacitor can fail. Defendants admit this. (Docket # 70 at 20 "Capacitors fail. No one disputes that."). The Hitachi WJ200 manual contains extensive warnings about the electrolytic capacitors in their product (Expert Report at 16) and the manual calculates the estimated life of the capacitor based on the accumulated running time of the drive and the internal drive temperature (Expert Report at 14). Defendants' experts also agree that when capacitors fail they have the potential to ignite a fire. (Affidavit of Teirney S. Christenson ("Christenson Aff.") ¶ 35, Exh. GG, Deposition of Derek Starr at 39, Docket # 87-33); (Christenson Aff. ¶ 56, Exh. BBB, Deposition of John Reagan at 100, Docket # 87-54.) Thus, it appears that the fact a capacitor can fail, and even the fact that a capacitor can fail and cause a fire, are commonly known risks. Whether, of course, the capacitor failed and caused a fire in this case is what the jury will need to decide.

I also disagree that Hamilton's opinion that the fire was caused by an electrical short is an unjustifiable extrapolation. Defendants argue that Hamilton has failed to "bridge that analytical gap crucial to causation" by failing to explain how a short-circuit would have ignited the inverter enclosure. (Docket # 70 at 17.) But Hamilton offers a detailed

explanation of how a short-circuit would have ignited the inverter enclosure. Again, Hamilton notes that the Hitachi manual calculates the estimated life of the capacitor based on the accumulated running time of the drive and the internal drive temperature. Thus, Hamilton states that it was “well documented in the literature that the material between the electrodes breaks down with heat.” (Hamilton Dep. at 40.) He explained that there was water inside the separator, which evaporates faster due to the extra heat. (*Id.*) The electrical stresses between the conductors “finally bridges that, jumps across[,] and creates a short-circuit.” (*Id.*) Hamilton explained that it is normal for the capacitors to degrade due to the separator breaking down from water evaporation; but with the elevated temperatures, it breaks down faster. (*Id.*) Hamilton also explained that his opinion was based on a “pretty standard engineering principle” called the “Arrhenius equation” that “applies to many materials” that “for every ten degrees centigrade of elevated temperature, you cut the life in half.” (*Id.* at 41.) Hamilton explained that the vibration contributed to the failure of the capacitor, noting that it was “established in the literature that vibration does stress capacitors and causes them to short, fail.” (*Id.*)

Hamilton explained that after the capacitor fails, it causes an overload of the DC bus. (*Id.* at 42.) He explained that the capacitor is connected across the rectifier bus, and its purpose is to take out any kind of voltage spikes, ripples, etc. (*Id.*) Hamilton stated that if the capacitor short-circuits, then “you have a direct short between the plus and minus buses of that rectifier.” (*Id.* at 42-43.)

Even though Hamilton testified that he could not opine whether the capacitor was the initiating flame event, or whether the shorting across the DC bus was the initiating flame event, (*Id.* at 46), Hamilton need not pinpoint the exact failure mechanism which caused the

fire. *See Auto-Owners Ins. Co. v. Uniden Am. Corp.*, 503 F. Supp. 2d 1087, 1095 (E.D. Wis. 2007) (“Although Hansen cannot pinpoint the exact failure mechanism which caused the fire, as noted above, experts can present alternate theories to support their conclusion.”). Thus, I find that Hamilton relies on known engineering principles to opine as to how the short-circuit occurred, which ultimately led to the fire.

Defendants also argue that Hamilton’s x-ray analysis is unreliable because he has never x-rayed inverters prior to this case and failed to do a physical comparison of x-ray images with the actual damaged inverters to confirm his theory regarding loss of mass. Defendants argue that Hamilton offers no support for his conclusions that localized melting at two points on the bridge rectifier can only be the result of electrical short prior to the fire and not damage as a result of the fire.

As an initial matter, Hamilton testified that he has previously examined x-rays of the Yaskawa inverter involved in the Green Valley incident (Hamilton Dep. at 215.) And although Hamilton did not compare the x-ray images of the inverter with the actual damaged inverter to confirm his theory, it is unclear to me why this would be necessary. Hamilton testified that he had previously examined x-ray images of an inverter in the Green Valley incident and can identify loss of mass based on the darkness of spots in the image. (*Id.* at 214-15.)

Further, contrary to defendants’ assertion, Hamilton does not opine that the localized melting at two points can *only* be the result of electrical short. Rather, Hamilton opines that the “possible explanations for the observed damage include an electrical failure, or damage by the fire.” (Oct. 3, 2017 Supplemental Hamilton Expert Report at 1, Docket # 71-1.) However, Hamilton believes that the damage was likely not caused by the fire

because the damage observed is isolated in two of the six connections on a chip slightly more than an inch in length. (*Id.*) Hamilton explains that the chip is located deep inside the inverter and mounted to a thick aluminum plate, which is in contact with the fan assembly's cold plate. (*Id.*) He opines that melting damage from the fire would not be so precise; it would affect a broader area of the chip. (*Id.* at 1-2.) Further, no similar damage was found on any of the other inverters examined in the vicinity. (*Id.* at 2.) Thus, for these reasons, I do not find that Hamilton's causation opinions lack foundational reliability.

### 3. *Reliability of Temperature Testing*

Defendants argue that Hamilton's temperature testing is irrelevant, unhelpful, and misleading. Specifically, defendants argue that the temperature testing does not support Hamilton's opinion that elevated temperature and vibration caused the capacitor to fail, ultimately causing a fire. (Docket # 70 at 20-21.) Defendants also argue that the temperature testing is unreliable and misleading because Hamilton measured his temperatures with the fan running at 100% capacity in 103°F ambient temperature when he has no data on the actual ambient temperatures over the fifteen months the Munters DC fan was in operation. (*Id.* at 22.)

Hamilton testified that the basis for his belief that the inverter overheated throughout its fifteen month life cycle was from his laboratory testing. (Hamilton Dep. at 35-36.) Hamilton notes that according to the instruction manual to the Hitachi WJ200 drive, the maximum ambient temperature for the drive is 40°C. (Expert Report at 7.) Hamilton opined that due to the location of the inverter and the small size of the inverter's sealed enclosure, the temperatures were higher than ambient. (*Id.*) He opined that with ambient temperatures

in the poultry barn reaching 38°C or more in the summer, the inverter would have been exposed to temperatures above the Hitachi specified limits. (*Id.*)

Hamilton ran a test using an S&R Egg prototype fan. (*Id.* at 8.) This fan had a molded plastic motor enclosure. (*Id.*) The fan assembly was connected to 480-volt AC power and was run at full operating speed. (*Id.*) Ambient temperature of 20°C was measured off to the side of the fan and temperatures within the inverter's outer enclosure were measured as high at 46°C. (*Id.*) Hamilton noted that this measurement was above the limits in Hitachi's specification. (*Id.*)

Hamilton ran additional tests using both the prototype fan and the production model fan. (*Id.*) Both fan units were run at elevated ambient temperatures of 27°C and 32°C and the prototype fan was run at 40°C. Temperatures during the testing of the prototype fan reached as high as 71°C within the inverter's outer enclosure. (*Id.*) Hamilton also performed testing at half and three-quarters speeds of the fan, but found no notable temperature deviation at those speeds. (*Id.*) Hamilton placed several thermocouples to measure "hot spots" around the tested inverters. (Hamilton Dep. at 100-01.)

Defendants essentially argue that Hamilton's temperature testing should not be included because he did not replicate the exact temperatures or exact running capacity at the S&R Egg Farm during the fifteen months the Munters DC fan was in operation. I disagree that Hamilton's opinion should be excluded on this basis. While Hamilton's testing at different temperatures may subject him to a difficult cross-examination, the exact replication of the barn's temperature setting is not required in order for an expert to assist the trier of fact to understand the evidence. *See Allstate Ins. Co. v. Electrolux Home Prod.*, Case No. 03-C-1249, 2005 WL 6746594, at \*2 (E.D. Wis. Oct. 31, 2005).

Furthermore, defendants argue that Hamilton relies entirely on a temperature reading of 161°F at a “hot spot” in the inverter, which he was only able to obtain at an ambient temperature of 103°F. (Docket # 96 at 2-3.) Defendants argue that the plaintiffs have admitted that the maximum temperature during the fifteen month time period in which the fans were in operation was 94°F. (*Id.* at 3.) But this is not the case. Even if you remove the tests Hamilton conducted at 103°F ambient temperature, Hamilton’s testing found several temperatures above the limits in Hitachi’s specifications at ambient temperatures less than 94°F. For example, at an ambient temperature of 68°F, Hamilton found a temperature inside the inverter of 46°C (115°F). (Expert Report at 9.) All of these temperatures were found in thermocouple locations TC2 and TC3. (*Id.*) While defendants are also critical of the locations at which the thermocouples were placed, this does not render Hamilton’s opinion unreliable. Hamilton testified that he used an infrared camera on the outside of the enclosure to see if there were any spots that looked hotter than others to try and get a sense if there was uniform heating or there was some areas exhibiting higher temperature rises than others. (Hamilton Dep. at 105-06.) Hamilton testified that the thermocouples were distributed throughout the enclosure, both inside and outside. (*Id.* at 106.) Further, Hamilton also performed testing at half and three-quarters speeds of the fan, but found no notable temperature deviation at those speeds. (Expert Report at 8.) For these reasons, I do not find that Hamilton’s temperature testing is unreliable.

#### *4. Evidence Regarding Incident at Green Valley*

Defendants argue that Hamilton relies on his understanding of a fire incident at Green Valley for his causation and defect opinions. (Docket # 70 at 23.) Defendants argue that this “other incident” evidence is inadmissible because it is not substantially similar to

the incident at hand. The plaintiffs counter that the Green Valley evidence is admissible because it is a component of the facts and data considered by Hamilton in forming his opinion, pursuant to Fed. R. Evid. 703. (Docket # 85 at 20-21.) The plaintiffs further argue that the Green Valley incident is admissible because it is substantially similar to the incident at S&R Egg Farm.

By way of background, the Green Valley incident involved a fire at Green Valley Ranch in Portland, Indiana on April 27, 2017. (Expert Report at 2.) Hamilton's employer, Crane Engineering, Inc., participated in the lab inspection of artifacts from the Green Valley incident on June 20, 2017. (*Id.*) In the Green Valley Ranch case, the fire was allegedly witnessed as starting at the drive of a Munters DC fan. (*Id.* at 5.) Defendants, however, dispute that this witness saw the fire coming directly from the Munters drive of a Munters DC fan. (Docket # 90 at 12.) Rather, defendants argue that the witness stated he saw a small flame in a black plastic guard of the fan and the black plastic guard is not part of the Munters fan, but is a light trap installed on the inside of all of the Munters fans at Green Valley Ranch. (*Id.* at 12-13.)

The Green Valley incident involved a Munters DC fan equipped with a Yaskawa cold plate inverter enclosed in a box of similar or same size as that used with the Hitachi inverter. (Hamilton Dep. at 200.) The capacitors did not fail in the Green Valley case; rather, it was the metal oxide varistors ("MOV"). (*Id.* at 200-01.) Hamilton noted that the Yaskawa drive uses three MOVs for voltage-spike suppression on the incoming power lines. (Expert Report at 5.) He noted that two of the MOVs were completely gone in the incident drive x-rays. (*Id.*) It was determined that the MOVs failed and started the fire. (*Id.*) The drive's plastic housing and the plastic drive enclosure provided fuel for the fire. (*Id.*)

Hamilton opines that examination of the S&R Egg Drive x-rays identified missing electrolytic capacitors and MOVs on several Hitachi inverters. (*Id.*) He found that there was also evidence of a DC bus link failure on one Hitachi inverter. (*Id.*)

The plaintiffs argue that they “merely offer Green Valley as support for the premise that a fire in the inverter of a Munters DC fan can ignite the enclosure and spread outside the fan given the design of the fans at S&R Egg Farm and Green Valley. This is even more likely with the black ABS plastic motor case on the prototype fan that all experts agree will aggressively burn.” (Docket # 85 at 23.)

“Evidence of other accidents in products liability cases is relevant to show notice to the defendant of the danger, to show existence of the danger, and to show the cause of the accident.” *Ross v. Black & Decker, Inc.*, 977 F.2d 1178, 1185 (7th Cir. 1992) (quoting *Nachtsheim v. Beech Aircraft Corp.*, 847 F.2d 1261, 1268 (7th Cir. 1988)). “However, before such evidence will be admitted, the proponent must show that the other accidents occurred under substantially similar circumstances.” *Id.* The admission of such evidence lies within the sound discretion of the trial judge. *Id.*

The plaintiffs in this case cannot show that the Green Valley accident occurred under substantially similar circumstances. Even though both incidents involved Munters DC fans with the same enclosure surrounding an inverter, the similarities end there. While the fire in this case was allegedly caused by the capacitor failing from excessive heat and vibration, the fire in the Green Valley case was caused by the MOVs failing. (Hamilton Dep. at 200.) The plaintiffs’ theory as to how the MOVs failed is unclear. However, Hamilton testified that he did not do any temperature or vibration testing for the Yaskawa inverter, nor was he aware of the operating temperature range or vibration level specifications of the Yaskawa inverter.



(*Id.* at 202.) Thus, given that the sequence of events causing failure is not substantially similar; the Green Valley evidence cannot be admitted as substantially similar. To the extent the plaintiffs offer Green Valley “as support for the premise that a fire in the inverter of a Munters DC fan can ignite the enclosure and spread outside the fan given the design of the fans at S&R Egg Farm and Green Valley. This is even more likely with the black ABS plastic motor case on the prototype fan that all experts agree will aggressively burn” (Docket # 85 at 23), the plaintiffs do not need to refer to the Green Valley incident for this proposition. The plaintiffs have experts who will opine on the flammability of the Fibox enclosure.

The plaintiffs also argue admissibility under Fed. R. Evid. 703. Fed. R. Evid. 703 states that an expert:

[M]ay base an opinion on facts or data in the case that the expert has been made aware of or personally observed. If experts in the particular field would reasonably rely on those kinds of facts or data in forming an opinion on the subject, they need not be admissible for the opinion to be admitted. But if the facts or data would otherwise be inadmissible, the proponent of the opinion may disclose them to the jury only if their probative value in helping the jury evaluate the opinion substantially outweighs their prejudicial effect.

Hamilton relies on his experience of personally observing the x-rays in the Green Valley incident as background support for his analysis of the x-ray evidence in this case. He also relies on his experience with Green Valley regarding the flammability characteristics of the Fibox enclosure.

I find that Hamilton’s opinion need not be excluded on the grounds that the underlying facts of the Green Valley incident are inadmissible, because he based his opinion on the facts that he personally observed. However, the plaintiffs may not disclose the underlying facts of the Green Valley incident to the jury. It is sufficient that Hamilton

testifies that he has experience with analyzing x-ray evidence, without getting into a side mini-trial on the Green Valley incident. Because of the difference in the failure mechanisms between the two fires, as well as the unreliability of the hearsay statement of the alleged “witness” to the Green Valley fire, the probative value in helping the jury evaluate Hamilton’s opinion is substantially outweighed by the facts’ prejudicial effect. There is too great of a risk that the jury will hear of a past fire involving a Munters DC fan and assume that this Munters DC fan is also defective, despite the fact that the alleged failure mechanisms in the two cases are substantially different.

5. *Reliability of Defective Design Opinion*

Defendants argue that Hamilton’s design defect opinion is speculation, depending wholly on his speculations regarding fire causation. (Docket # 70 at 24-25.) Defendants further argue that Hamilton failed to test his alternate design theories. (*Id.* at 25-26.) The plaintiffs argue that the alternative design options set forth by Hamilton are not the type of designs that require testing because they are based on common sense and simple engineering principles. (Docket # 85 at 25.)

Hamilton opined that the Munters Drive had several design defects, specifically, (1) lack of ventilation space; (2) exposure to high vibration; (3) the inverter’s external, sealed drive enclosure is made of a material that will burn; and (4) the design does not allow for ease of access to perform routine inspections. (Expert Report at 11-12.) For the same reasons I find that Hamilton’s causation opinion passes muster under *Daubert*, I find that Hamilton’s opinions regarding the design defects of the Munters drive is admissible.

Regarding alternative designs, Hamilton opined that the standard Hitachi inverter could have been used in a suitably sized metal enclosure mounted near the fan, which

would have isolated it from vibration and allowed for conventional cooling. (*Id.* at 22.) Hamilton opines that alternatively, the fan inverters could have been mounted remotely in a clean environment and while the cable length between the drive and motor is limited, there are methods to eliminate these issues and have long cable runs. (*Id.*)

While defendants are critical of Hamilton's alternative design opinion because he did not conduct any testing of the alternative designs, the Seventh Circuit has found that "live" testing of an alternative design is not necessary for Rule 702 and *Daubert*. *Baugh v. Cuprum S.A. de C.V.*, 845 F.3d 838, 845 (7th Cir. 2017) (finding that expert tested alternative design using centuries-old mathematics principles). I agree with the plaintiffs that Hamilton's alternative design opinions are based on straightforward engineering principles; specifically, that metal is a better conductor of heat than plastic and that metal is less flammable than plastic. Further, Hamilton's alternative design regarding mounting the fan inverters remotely straightforwardly addresses the concerns for access to perform routine inspections and lower temperature concerns. This is not to say that Hamilton will not be cross-examined on these matters. But exclusion on this basis is not warranted. For these reasons, I find that Hamilton's design defect and alternative design opinions are admissible.

### **ORDER**

**NOW, THEREFORE, IT IS ORDERED** that the defendants' motion to exclude opinions and testing of Steven Hamilton (Docket # 74) is **GRANTED IN PART AND DENIED IN PART**. The defendants' motion is granted to the extent that the plaintiffs may not disclose the underlying facts of the Green Valley incident to the jury. However, the defendants' motion is denied on all other grounds.

Your attention is directed to General L.R. 72(c), 28 U.S.C. § 636(b)(1)(B) and Federal Rules of Criminal Procedure 59(b), or Federal Rules of Civil Procedure 72(b) if applicable, whereby written objections to any recommendation or order herein, or part thereof, may be filed within fourteen days of the date of service of this recommendation or order. Objections are to be filed in accordance with the Eastern District of Wisconsin's electronic case filing procedures. Courtesy paper copies of any objections shall be sent directly to the chambers of the district judge assigned to the case. Failure to file a timely objection with the district court shall result in a waiver of a party's right to appeal. If no response or reply will be filed, please notify the Court in writing.

Dated at Milwaukee, Wisconsin this 8<sup>th</sup> day of August, 2018.

BY THE COURT:

*s/Nancy Joseph*  
NANCY JOSEPH  
United States Magistrate Judge